

WHAT IS CLAIMED IS:

1. A system comprising:

a fuel cell; and

a heat exchanger coupled to the fuel cell, wherein the heat exchanger is arranged upstream of the fuel cell in a flow of gaseous reactants for the fuel cell for preheating gaseous reactants, wherein the heat exchanger is arranged downstream of the fuel cell in a flow of at least a portion of the waste gas from the fuel cell, and wherein the heat exchanger is directly integrated with the fuel cell so that there is a direct flow transition from the heat exchanger to the flow cell.
2. The system of claim 1, wherein the fuel cell is supplied essentially uniformly over a width of the fuel cell's stacks by the heat exchanger with the preheated gaseous reactants.
3. The system of claim 2, wherein the gaseous reactants include at least one of air and oxygen.
4. The system of claim 3, further comprising a burner that is integrated in the heat exchanger and designed as an afterburner for the reactants, which have not been consumed in the fuel cell.
5. The system of claim 4, wherein the heat exchanger includes a plate heat exchanger.
6. The system of claim 1, further comprising a burner that is integrated in the heat exchanger and designed as an afterburner for the reactants, which have not been consumed in the fuel cell.
7. The system of claim 1, wherein the heat exchanger includes a plate heat exchanger.
8. The system of claim 1, wherein the gaseous reactants include at least one of air and oxygen.

9. The system of claim 8, further comprising a burner that is integrated in the heat exchanger and designed as an afterburner for the reactants, which have not been consumed in the fuel cell.

10. The system of claim 9, wherein the heat exchanger includes a plate heat exchanger.

11. A method for making a system comprising the step of:

coupling a heat exchanger to a fuel cell by arranging the heat exchanger upstream of the fuel cell in a flow of gaseous reactants for the fuel cell for preheating gaseous reactants and arranging the heat exchanger downstream of the fuel cell in a flow of at least a portion of the waste gas from the fuel cell; and

directly integrating the heat exchanger with the fuel cell so that there is a direct flow transition from the heat exchanger to the flow cell.

12. The method of claim 11, further comprising the step of using the heat exchanger to supply the preheated gaseous reactants to the fuel cell essentially uniformly over a width of the fuel cell's stacks.

13. The method of claim 12, wherein the gaseous reactants include at least one of air and oxygen.

14. The method of claim 13, further comprising integrating a burner in the heat exchanger, wherein the burner is designed as an afterburner for the reactants, which have not been consumed in the fuel cell.

15. The method of claim 14, wherein the heat exchanger includes a plate heat exchanger.

16. The method of claim 11, further comprising integrating a burner in the heat exchanger, wherein the burner is designed as an afterburner for the reactants, which have not been consumed in the fuel cell.

17. The method of claim 11, wherein the heat exchanger includes a plate heat exchanger.

18. The method of claim 11, wherein the gaseous reactants include at least one of air and oxygen.

19. The method of claim 18, further comprising integrating a burner in the heat exchanger, wherein the burner is designed as an afterburner for the reactants, which have not been consumed in the fuel cell.

20. The method of claim 19, wherein the heat exchanger includes a plate heat exchanger.